

DENON

Hi-Fi Component

SERVICE MANUAL

MODEL POA-5000

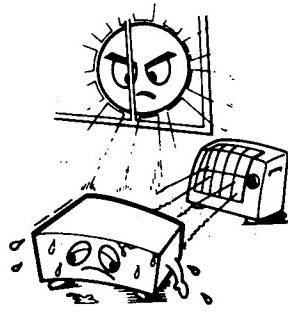
STEREO POWER AMPLIFIER



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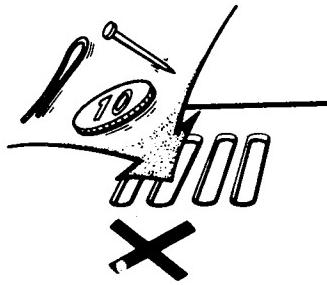
NIPPON COLUMBIA CO., LTD.

NOTE ON USE**Be careful of high temperatures**

- Do not place the set in a location where it will be exposed to direct sunlight or near a heating appliance.

Caution on rack/cabinet installation

- Avoid installing the set in a closed-type rack.
- When installing in a rack or cabinet, provide a sufficiently large ventilation opening to promote heat radiation.

**Do not allow foreign matter into the equipment**

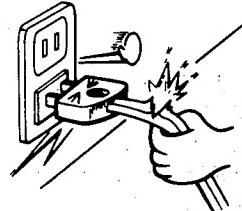
- Be especially careful of needles, hair pins, and coins getting into the set.

**Caution on humidity, water, and dust**

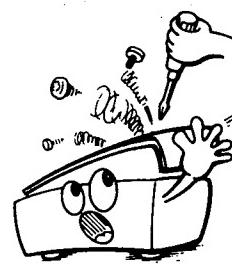
- Do not place the set in a location where there is high humidity or a lot of dust.
Flower vases or other items containing water should not be placed on top of the set.

**Care of the case**

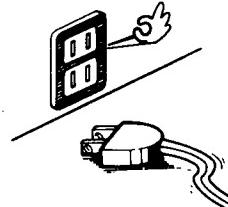
- Avoid the use of pesticides near the set as well as wiping the case with benzine, thinner or other solvents since they may cause a change in quality or color. Use a soft cloth when wiping away dirt and follow the instructions carefully when using chemically treated cloths.

**Care with the power cord**

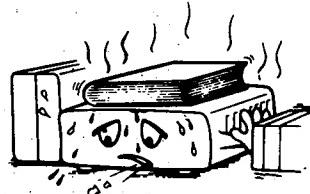
- When removing the plug from the receptacle, do not pull the power cord; be sure to hold the plug when removing it.

**Do not open the case**

- Opening the top cover or the bottom plate of the case and inserting your hand is dangerous. Do not open the case.
If some trouble arises with the performance of the set, remove the power plug soon and contact the store where the set was purchased or a nearby dealer.

**During your absence**

- When not using the set for an extended period such as when taking a trip, be sure to disconnect the plug from the receptacle.

**For sets with ventilation holes****Do not block the ventilation holes of the set**

- Blocking of the ventilation holes will lead to damage of the set.
- The ventilation holes are very important for heat radiation from within the set. Care must be taken since placing an object against the holes will result in an extreme rise of temperature within the set.

INSTALLATION PRECAUTIONS

Install the POA-5000 horizontally. Leave at least 15 cm of space between this unit and other components on top of the amplifier.

Protective Circuit

This set is equipped with a high speed protective circuit. This circuit protects the internal circuitry from damage due to large currents flowing when the speaker jacks are not completely connected or when an output is generated by a short circuit. This protective circuit's operation cuts off the output to the speakers. In such a case, be sure to turn the power to the set off and check the connections to the speakers. Then turn the power on again. After muting for several seconds, the set will operate normally.

Please check to make sure the following items are included with the main unit in the carton:

- (1) Operating Instructions 1
- (2) Remote connecting cable 1

SPECIFICATIONS**■ POWER AMPLIFIER SECTION**

• Rated output power:	STEREO: FRONT CENTER REAR	100 W + 100 W (8 ohms load, T.H.D. 0.02%) 140 W + 140 W (6 ohms load) 50 W + 50 W (8 ohms load, T.H.D. 0.02%) 70 W + 70 W (6 ohms load) 50 W + 50 W (8 ohms load, T.H.D. 0.02%) 70 W + 70 W (6 ohms load)
• Total harmonic distortion:	STEREO/MONAURAL:	0.008% (20 Hz ~ 20 kHz, -3 dB at rated output, 8 ohms)
• Intermodulation distortion:	STEREO/MONAURAL:	0.005% or less (7 kHz/60 Hz = 1/4 at a load of 8 ohms and amplitude output equivalent to the rated output)
• Power bandwidth:	STEREO/MONAURAL:	5 Hz ~ 50 kHz (T.H.D. 0.05%, -3 dB at rated output, 8 ohms)
• Frequency response:	STEREO: CENTER MONAURAL: 2 Hz ~ 80 kHz	1 Hz ~ 100 kHz (At a load of 8 ohms and 1 W output) (At a load of 8 ohms and 1 W output)
• Input sensitivity:	STEREO: MONAURAL:	1 V 0.7 V
• Input impedance:	STEREO: MONAURAL:	47 kohms 47 kohms
• Output impedance:	STEREO: MONAURAL:	0.08 ohms (1 kHz) 0.16 ohms (1 kHz)
• S/N ratio (IHF a Network):	STEREO: MONAURAL:	118 dB 113 dB

■ GENERAL

• Power supply:	AC 120 V/60 Hz (for U.S.A. model)
	AC 110/220 V 50/60 Hz (for multi-voltage model)
• Power consumption:	6.0 A (for U.S.A. model)
	450 W (for multi-voltage model)
• Dimensions:	434 (W) × 185 (H) × 415 (D) mm (17-3/32") × (7-9/32") × (16-11/32")
• Weight:	24.2 kg (53 lbs 6 oz)

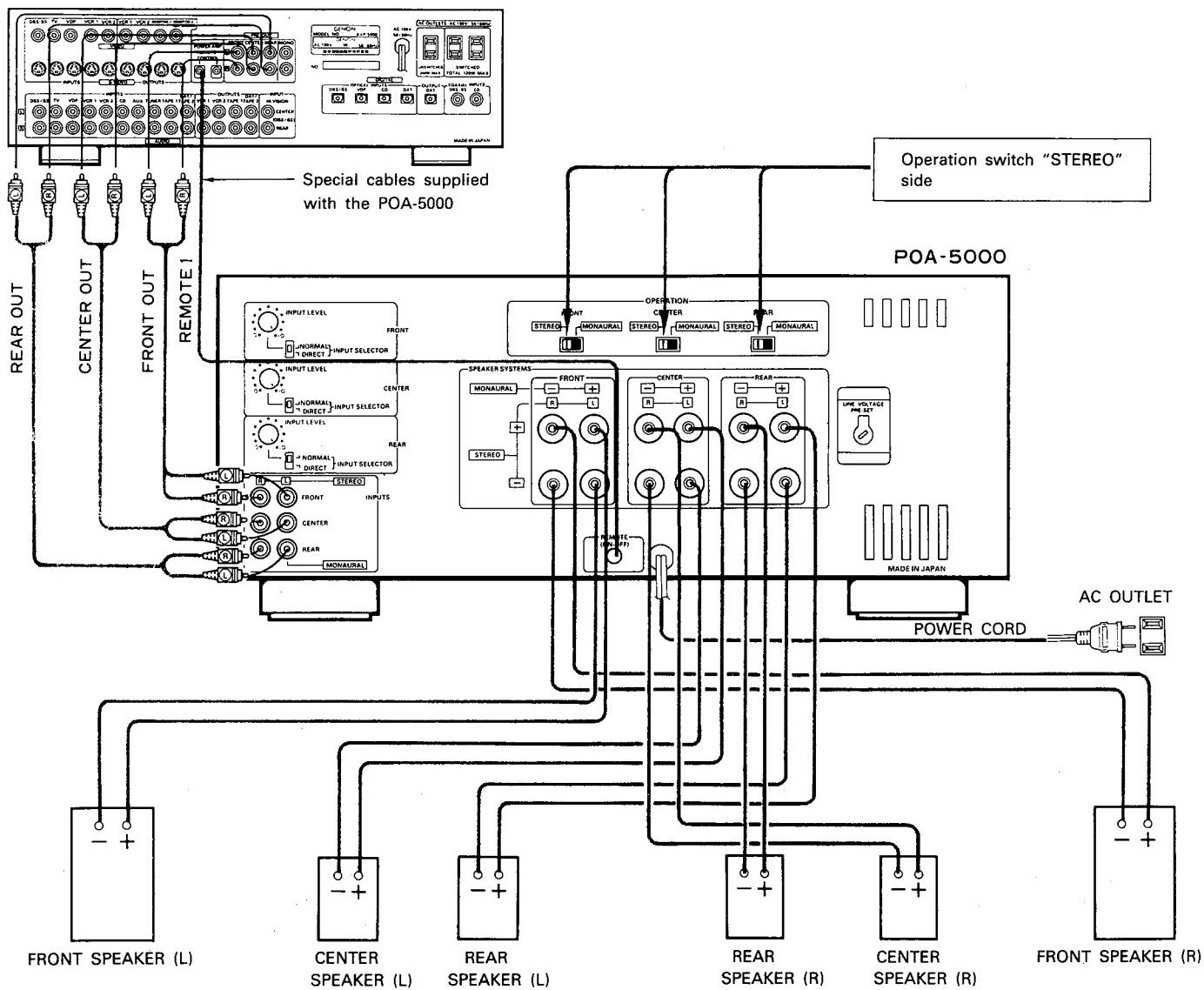
* Specifications and design are subject to change without notice for the purpose of improvement.

CONNECTIONS

[When used for stereo operation]

Preamplifiers for surround and other reproduction equipment

AVP-5000 connection examples (When connecting another preamplifier, see the accompanying instruction manual.)



Precautions When Making Connections

- Do not plug the power cord into the power outlet until all the connections have been completed.
- After checking the left and right channels, make proper connections: L with L, and R with R.
- Insert the plugs securely. Incomplete connections will cause noise to be generated.
- Note that bundling pin-plug cords with the power cord or placing pin-plug cords close to the power transformer might lead to the occurrence of hum or noise.

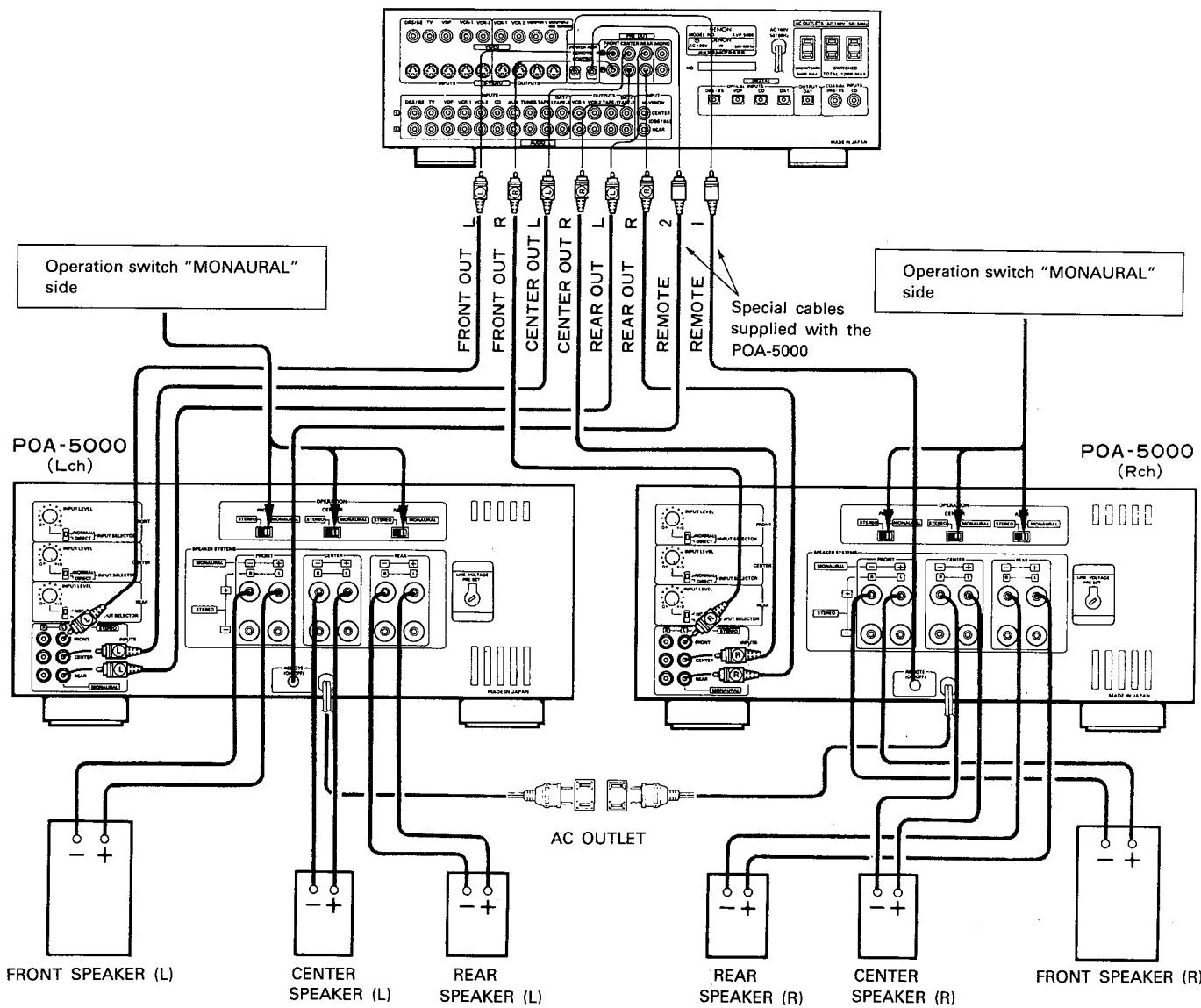
NOTE:

- Be sure to switch off the power before changing the position of the operation switch.
- The connection method for the speakers will differ with stereo and monaural operation.
- When the settings of the operation switches are made separately for each of FRONT, CENTER, and REAR, the input and speaker output connections must be made to match the stereo/monaural operation of the various sections.

[When used for monaural operation]

Preamplifiers for surround and other reproduction equipment

AVP-5000 connection examples (When connecting another preamplifier, see the accompanying instruction manual.)



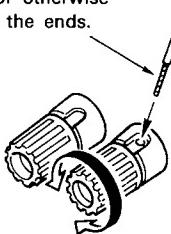
① Peel the insulation off the end of the cord.

② Twist the conductors

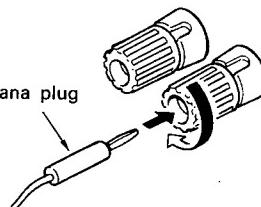
③ Turn the speaker terminals counterclockwise to loosen them.

④ Insert the conductor section of the cord all the way into the terminal and tighten the terminal in the clockwise direction.

Speaker Terminal Connections
Twist the conductors tightly or otherwise process the ends.



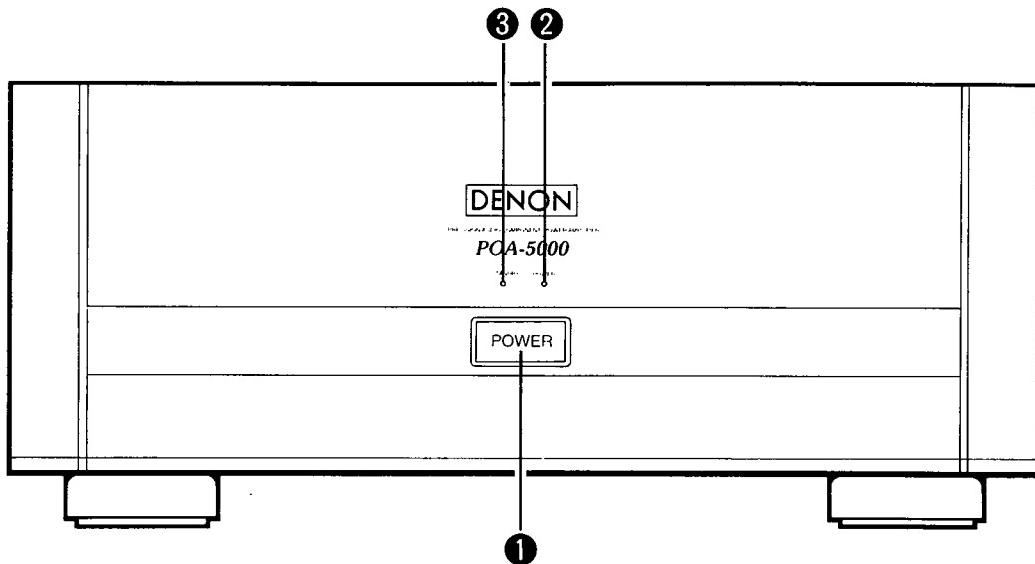
Banana Plug Connections



Tighten the terminal by turning clockwise, then insert the banana plug.

NAMES AND FUNCTIONS OF THE PARTS

Front Panel

**① POWER (Power switch)**

Pressing this switch causes the POWER indicator ② to light and the power to be switched on. The muting circuit will operate for several seconds to prevent the noise that arises when the power is switched on, then the amplifier will enter the normal operating condition.

Connecting the output of a DENON component equipped with a REMOTE output to REMOTE input ⑨ of the rear panel in this condition (using the remote cable supplied with this amplifier) will allow the operating condition of the amplifier to be switched to standby or normal operation, synchronized with the power on/off state of the component at the other side. Pressing the POWER switch once again will cause the indicator to go off and the power to be switched off.

② POWER (Power indicator)

The indicator lights up (red) when the power is on and goes off when the power is switched off.

③ STANDBY (Standby display)

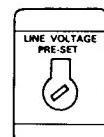
This indicator lights up (orange) to indicate the standby condition when the power is switched off with the component of the other side which is connected with the remote cable.

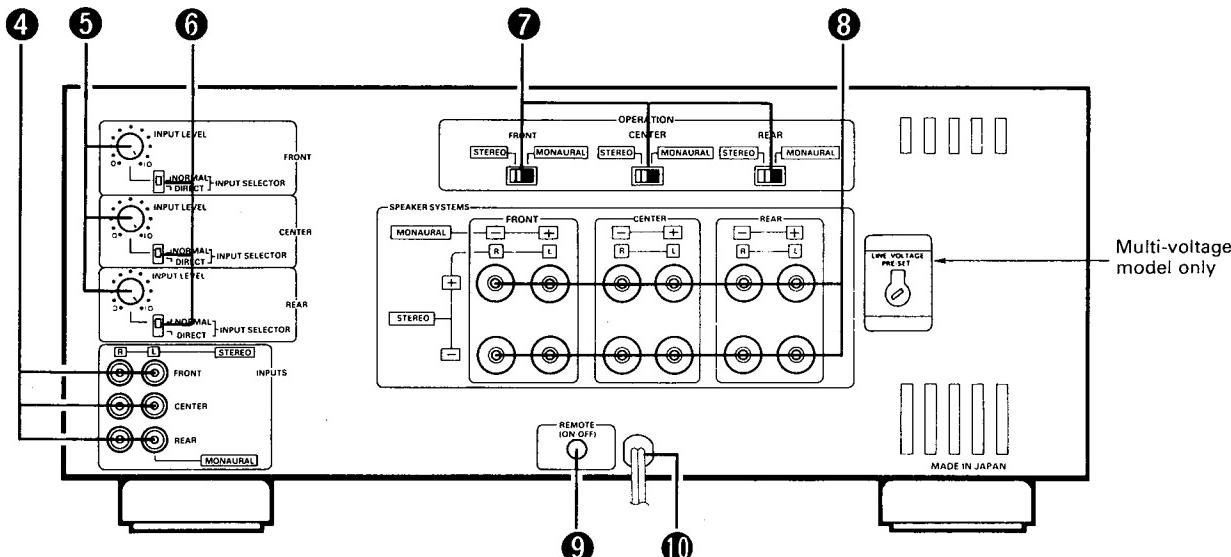
NOTE:

- When you will be away for a long period such as when on a trip, set the POWER switch of this amplifier to the off position, rather than use the standby condition.

• LINE VOLTAGE (Voltage select switch) . . . For Multi-voltage model only.

- * The desired voltage may be set with the VOLTAGE SELECTOR KNOB on the back panel using a screw driver.
- * Do not twist the VOLTAGE SELECTOR KNOB with excessive force. It may be damaged.
- * If the voltage select switch does not turn smoothly, see qualified serviceman.



Rear Panel**4 INPUTS (Input jacks)**

These are the input jacks for each of the FRONT, CENTER, and REAR sections. Make connections to correspond with each output of an AV surround preamplifier, etc.

When OPERATION switch 7 is set to MONAURAL, the left channel side becomes a monaural input jack. Do not connect the right channel side at this time.

5 INPUT LEVEL (Input level controls)

These controls are used to adjust the input level of each of the inputs: FRONT, CENTER, and REAR.

6 INPUT SELECTOR (Input selection switches)

Set to the "NORMAL" side when using the INPUT LEVEL controls 5. This allows input level adjustments to be made. Setting to the "DIRECT" side makes the input signal bypass the input level control and applies the signal directly to the power amplifier to provide even higher quality reproduction.

7 OPERATION (Operation switch)

This switch provides switching between stereo and monaural operation to correspond with each input of the FRONT, CENTER, and REAR sections.

NOTE:

- This amplifier permits a bridged connection (BTL) of the 2 amplifiers (of the left and right channels) for monaural operation which uses a positive and negative polarity amplifier.

• "STEREO"

The amplifier is set to this position before being shipped from the factory. This setting provides 2-channel (left and right) stereo operation for each input.

• "MONAURAL"

This setting uses the monaural input jack (left channel side) for monaural operation with each input.

NOTE:

- The switches are equipped with covers to prevent erroneous operation. Use a flat-bladed screwdriver with a thin tip from the space at the top side, and be sure to perform the switching with the power off.
- Note that the connection method of the input jacks and the speaker terminals will differ depending on stereo or monaural operation. (See the connection diagrams on Pages 6 and 7.)
- This amplifier contains a 2-channel power amplifier for each of the FRONT, CENTER, and REAR sections for a total 6-channel structure. Selection of stereo or monaural operation with each OPERATION switch allows this amplifier to be used as a 6-, 5-, 4-, or 3-channel power amplifier.

8 SPEAKER SYSTEM (Speaker connection terminals)

Connect the speaker cords here. Be sure to connect the same polarity speaker system and amplifier speaker terminal (that is, (+) with (+), and (-) with (-)).

NOTE:

- The speaker connection method will differ for stereo and monaural operation. (See the connection diagrams on Pages 4 and 5.)

9 REMOTE (Power Supply Remote Input Jack)

Connect this jack with a DENON component equipped with a REMOTE (power supply remote output) jack. Use the special cable supplied with this amplifier for the connections.

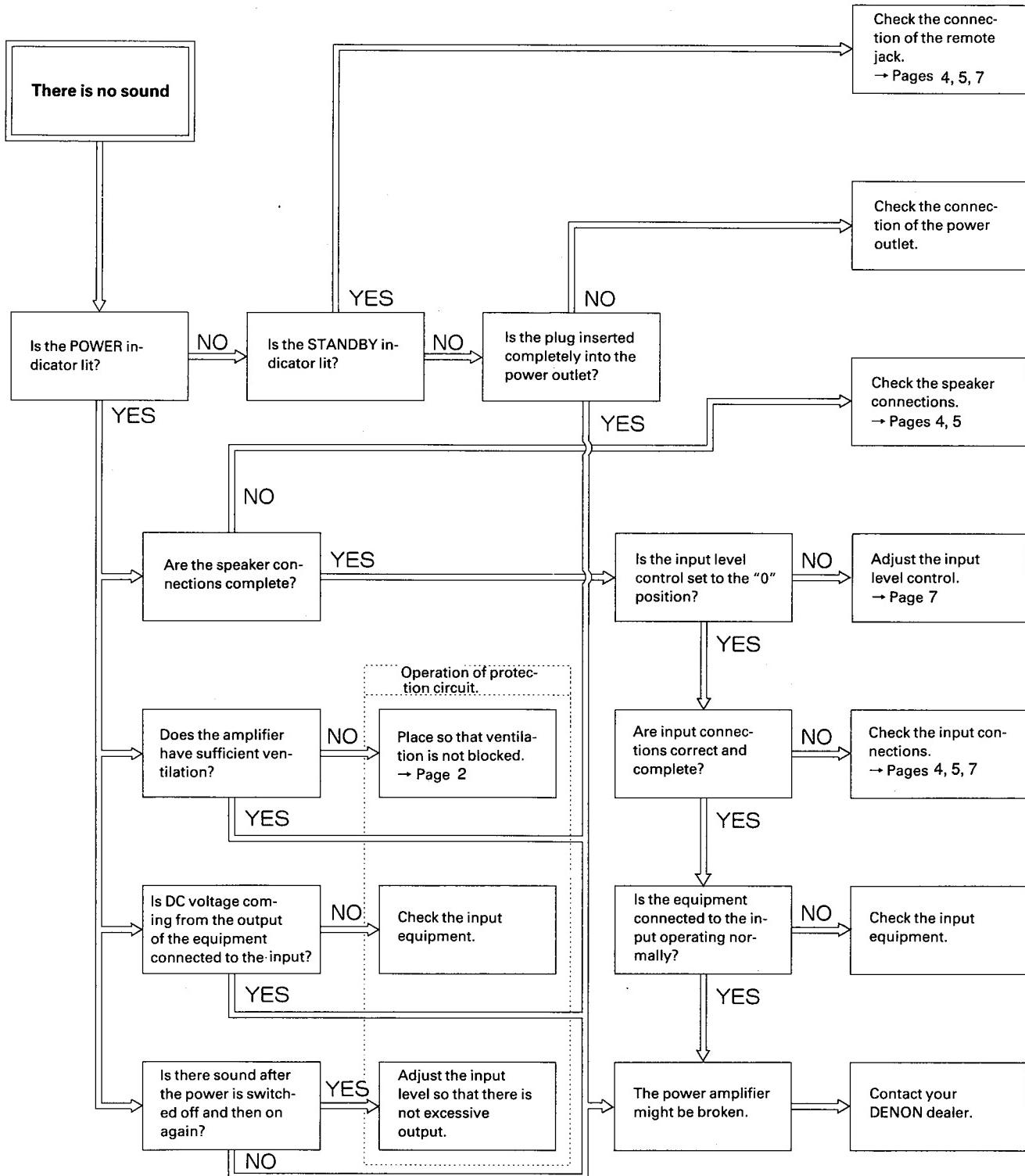
10 Power Cord

Plug this cord into the power outlet.

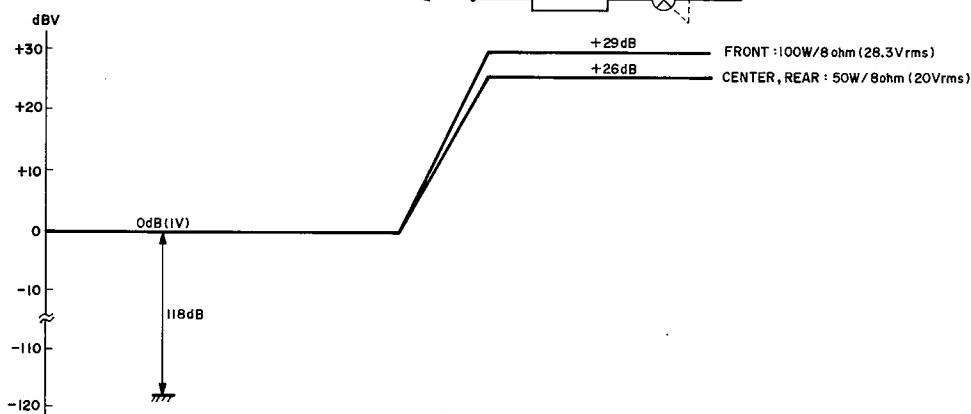
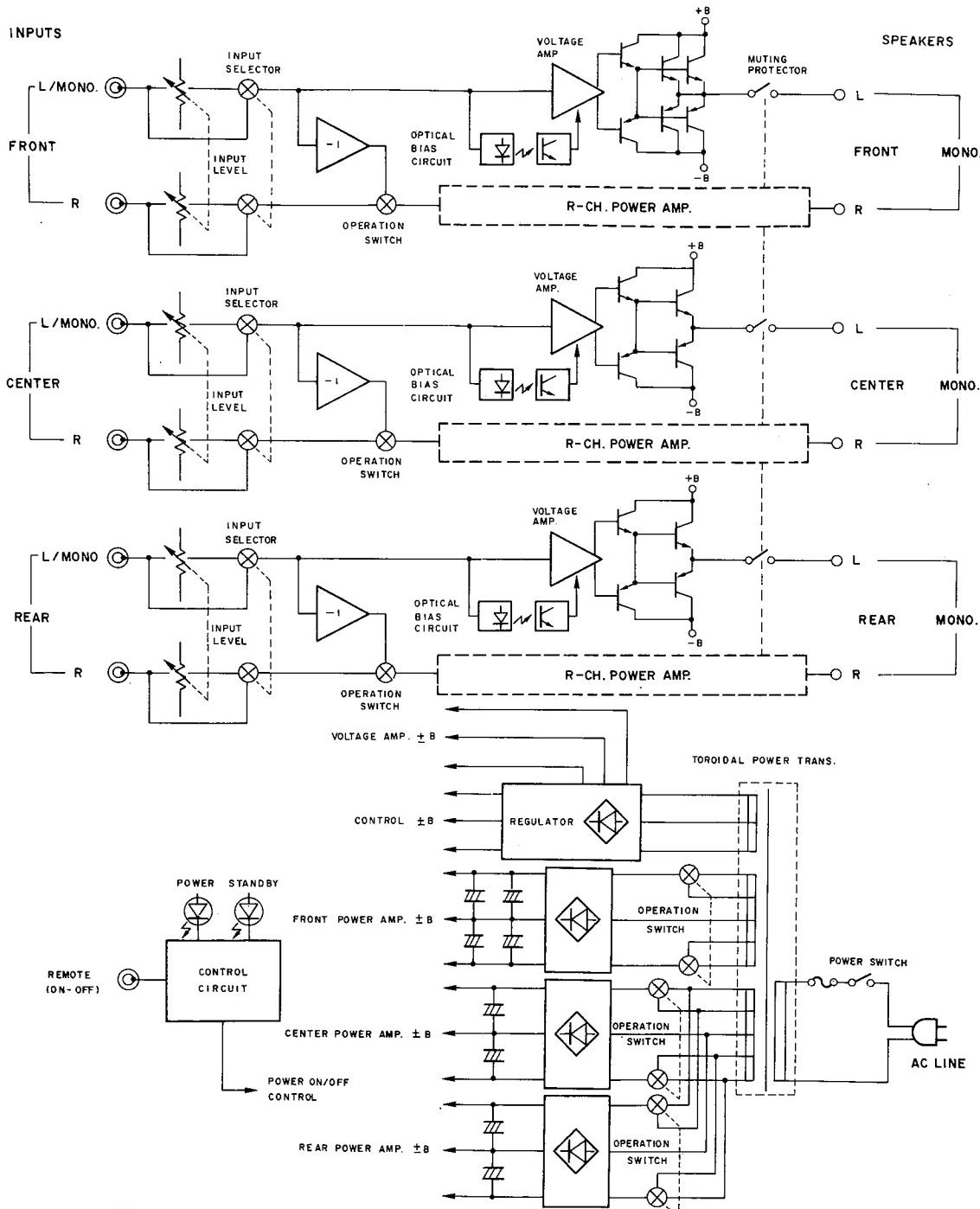
TROUBLESHOOTING

1. Have all connections been made PROPERLY?
2. Have you followed all operational instructions correctly?
3. Check speaker and the preamplifier systems for proper operation.

When your unit does not seem to be operating correctly, first check the items in the following table. If the symptom does not correspond to any of the problems as shown below, turn off the power sources immediately and contact your DENON dealer.



BLOCK & LEVEL DIAGRAM

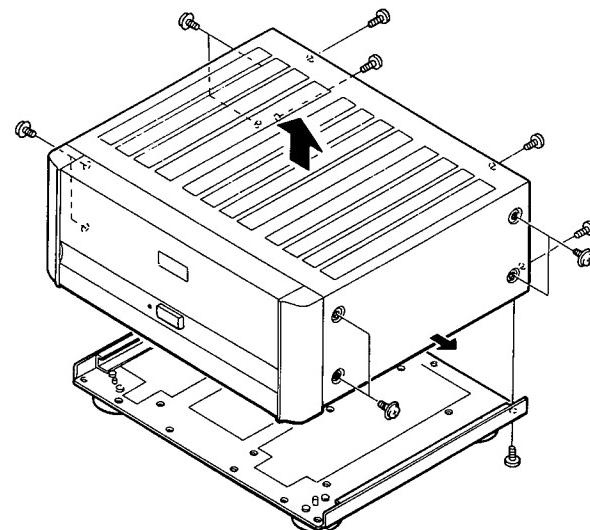


DISASSEMBLY INSTRUCTIONS

1. Top Cover and Bottom Cover

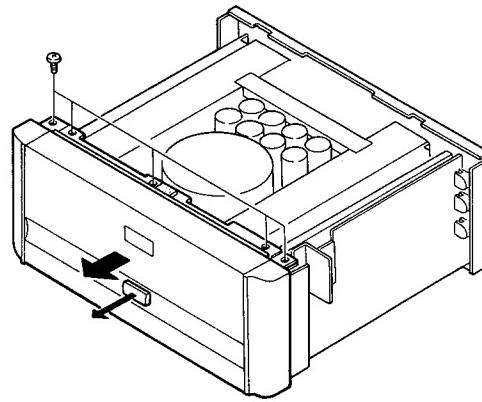
- 1) Remove 8 screws on both sides and 4 screws on rear side. Stretch side plates of Top Cover sidewise, and pull up Top Cover in arrow direction.
- 2) Remove 20 screws and detach Bottom Cover.

Note) 8 Zinc coated screws are attached on right and left of Bottom Cover. Do not remove those screws.



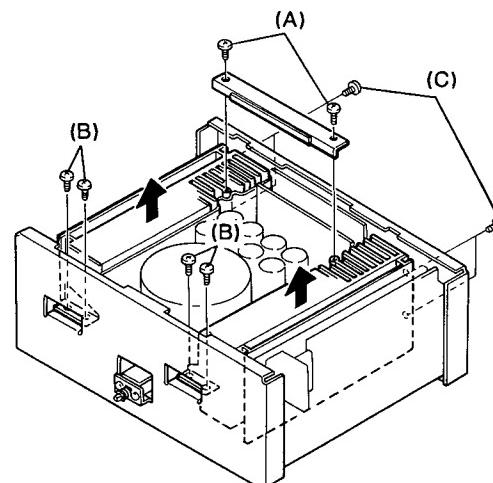
2. Front Panel

After pulling out power switch knob to front, remove 5 upper screws on Front Panel and pull Front Panel in arrow direction.



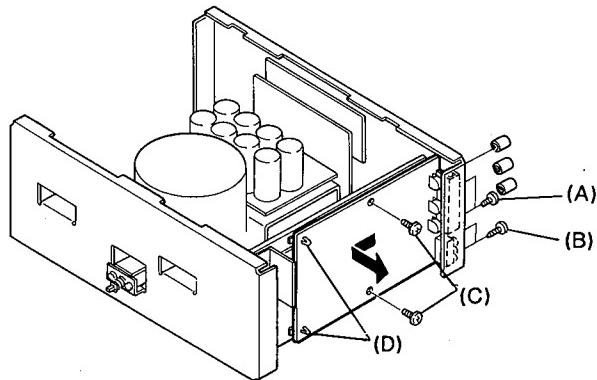
3. Power Unit (Left/Right)

Remove 2 screws (A) and detach Heat sink tank supporter. Secondly, remove 4 front screws (B) and 4 rear screws (C), then detach left and right Power Unit in arrow direction respectively.

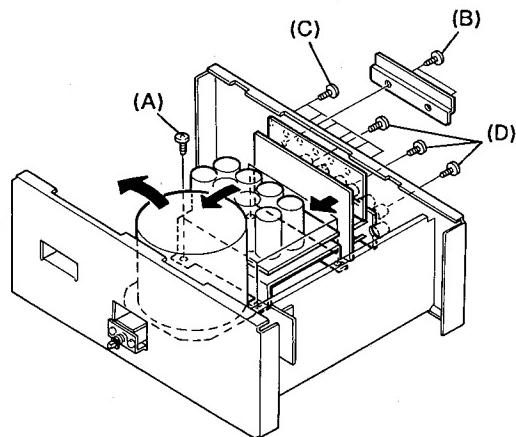


4. Input P.W.B.

- 1) Take off 3 knobs of volume knob (FRONT, CENTER, REAR) of input level which is located on rear side.
- 2) Remove rear 2 screws (A) fixing input volume holder to body, and remove 2 rear screws(B) fixing input terminal (RCA Jack).
- 3) Remove 2 screws (C) fixing input P.W.B. and detach P.W.B. from holder (D) on two places. Then pull out P.W.B. in arrow direction.

**5. Power Unit and Speaker Terminal**

- 1) Remove 8 screws fixing power transformer.
- 2) Remove 4 screws (A) of holder fixing power P.W.B.
- 3) Remove rear 2 screws (B) and detach switch guard of operation switch.
- 4) Remove 6 screws (C) fixing operation switch.
- 5) Remove 3 screws (D) fixing Speaker terminal.
- 6) Remove terminals of transformer, power unit, and speaker in arrow direction.



ADJUSTING AND CHECKING

- Adjustment of idling current.
- 1) Measurement instruments required for adjustment.
* Digital voltmeter *Low frequency oscillator

2) Preset

1) Place the unit where having normal use conditions avoiding abnormally ventilated places such as nearby electric fans.

2) Set knobs, switches and others as follows:

- POWER (Power switch) → OFF (■)
- Rear side INPUT LEVEL (Volume control knob) → (▽) minimum
- Rear side SPEAKER SYSTEM (Speaker terminal) → No load (no connection with speakers, dummy resistors, etc.)
- Rear OPERATION SWITCH (Operation shifting switch) → STEREO

3) Adjustment

1) Initial setting.

- Remove Top Cover and set semi-fixed volume of Power Amplifier (1U-2236-1,-2), VR501, 502, 503, 504, 601, 602, 603, 604, 701, 702, 703, 704 at center position.

2) Idling current adjustment.

- Connect DC voltmeter to each test point (T.P.) of FRONT, CENTER, REAR and each of L/R channels, and turn Power switch "ON" (■) and turn semi-fixed volume for each channel to set to voltage values in Table 1.

Table 1

Adjust channel		Adjust spot	Test point	Adjust voltage value (DC)	
				Immediately after power ON	After 10 min.
FRONT	L	VR501	FRONT-L	1±0.5mV	10±1mV
	R	VR502	FRONT-R	1±0.5mV	10±1mV
CENTER	L	VR601	CENTER-L	1±0.5mV	4±1mV
	R	VR602	CENTER-R	1±0.5mV	4±1mV
REAR	L	VR701	REAR-L	1±0.5mV	4±1mV
	R	VR702	REAR-R	1±0.5mV	4±1mV

Note) Adjust voltage value between test points denotes the absolute value.

3) Adjustment of "Optical class A" idling current.

- Connect low frequency oscillator to each input terminal of each L/R channel of FRONT, CENTER, REAR, and input sine wave of 50m Vrms 1KHz.
- Set rear side INPUT LEVEL volume maximum (▽) at that time confirm that indication of DC voltmeter are increasing by steps from the adjust values in Table 1.
- Adjust voltage of each channel according to Table 2.

Adjust channel		Adjust spot	Test point	Adjust voltage value (DC)	
				Immediately after the increase	After 10 min.
FRONT	L	VR503	FRONT-L	40±5mV	55±2mV
	R	VR504	FRONT-R	40±5mV	55±2mV
CENTER	L	VR603	CENTER-L	45±5mV	60±2mV
	R	VR604	CENTER-R	45±5mV	60±2mV
REAR	L	VR703	REAR-L	45±5mV	60±2mV
	R	VR704	REAR-R	45±5mV	60±2mV

Note) Adjust voltage value between test points denotes the absolute value.

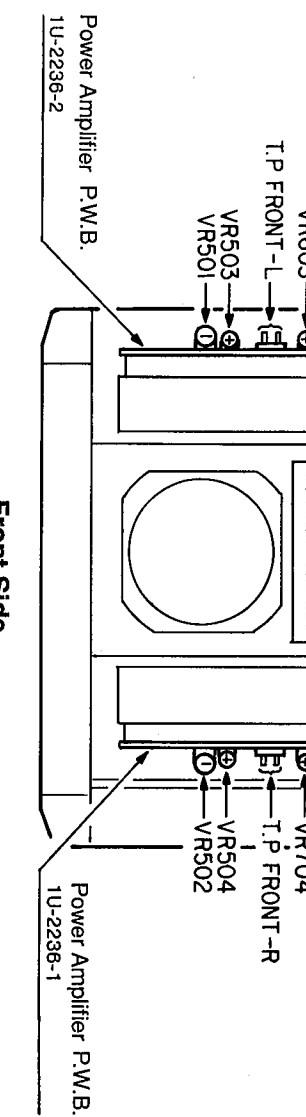
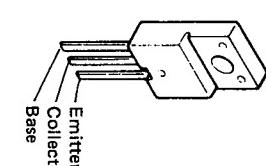
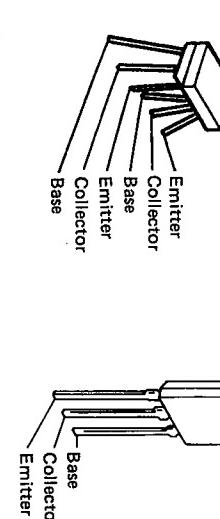
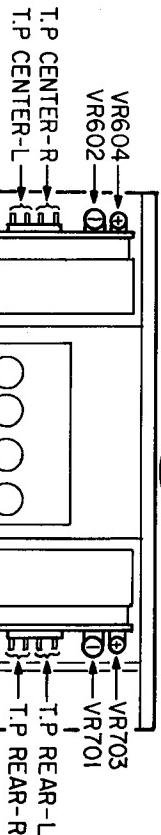
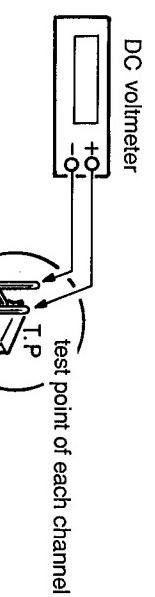
Table 2

2SA1240 (F/G)

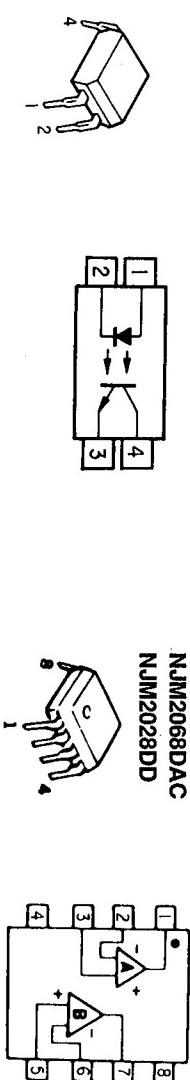
**2SD2004 (P)
2SB1328 (P)**

**2SD1944
2SB1287**

**2SD1763A (D)
2SB1186A (D)**

**Front Side****● Confirmation of neutral point voltage.**

- 1) Connect a DC voltmeter to speaker terminal.
- 2) Turn power on for the unit.
- 3) Set rear side INPUT LEVEL volume at maximum (○).
- 4) Confirm that voltage of digital voltmeter is within the range of ± 100 mV (for each channel L/R).

SEMICONDUCTORS**● IC****TLR521-1 (BL)**

NJM4558DD
NJM2068DAC
NJM2028DD

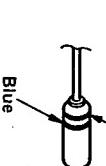
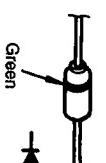
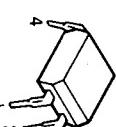
● Diode (included LED)

**1S2076A
1SS270A**

1SS198

1SS82

**HZ5C-1
HZ9B-2
HZ12A-2
HZS15-2**

**S10VB20F-15****S10VB20****SEL-4117R (Red)
SEL-4917D (Org)****● OTHERS****PTH487A01BD22TS****● Transistors**

**2SA1145 (O)/(Y)
2SC4208A
2SD667A (C)
2SC2705 (O)/(Y)**

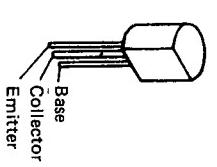
**RN1202 (10k-10k)
RN1205 (2.2k-47k)
RN2202 (10k-10k)**

**RN1202
RN2202
RN1205**

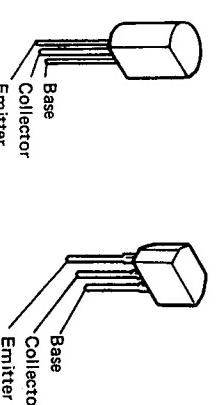
**SEL-4117R (Red)
SEL-4917D (Org)**

PTH487A01BD22TS

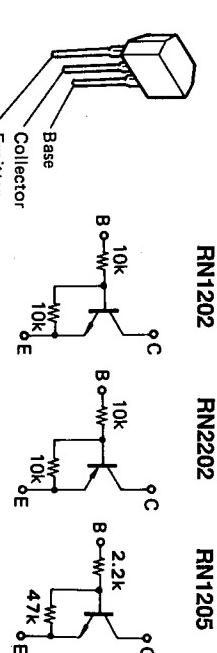
Yellow



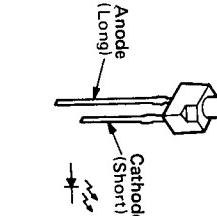
**Base
Collector
Emitter**



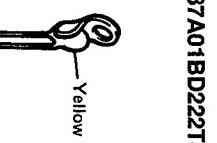
**Base
Collector
Emitter**



**Base
Collector
Emitter**



**Base
Collector
Emitter**

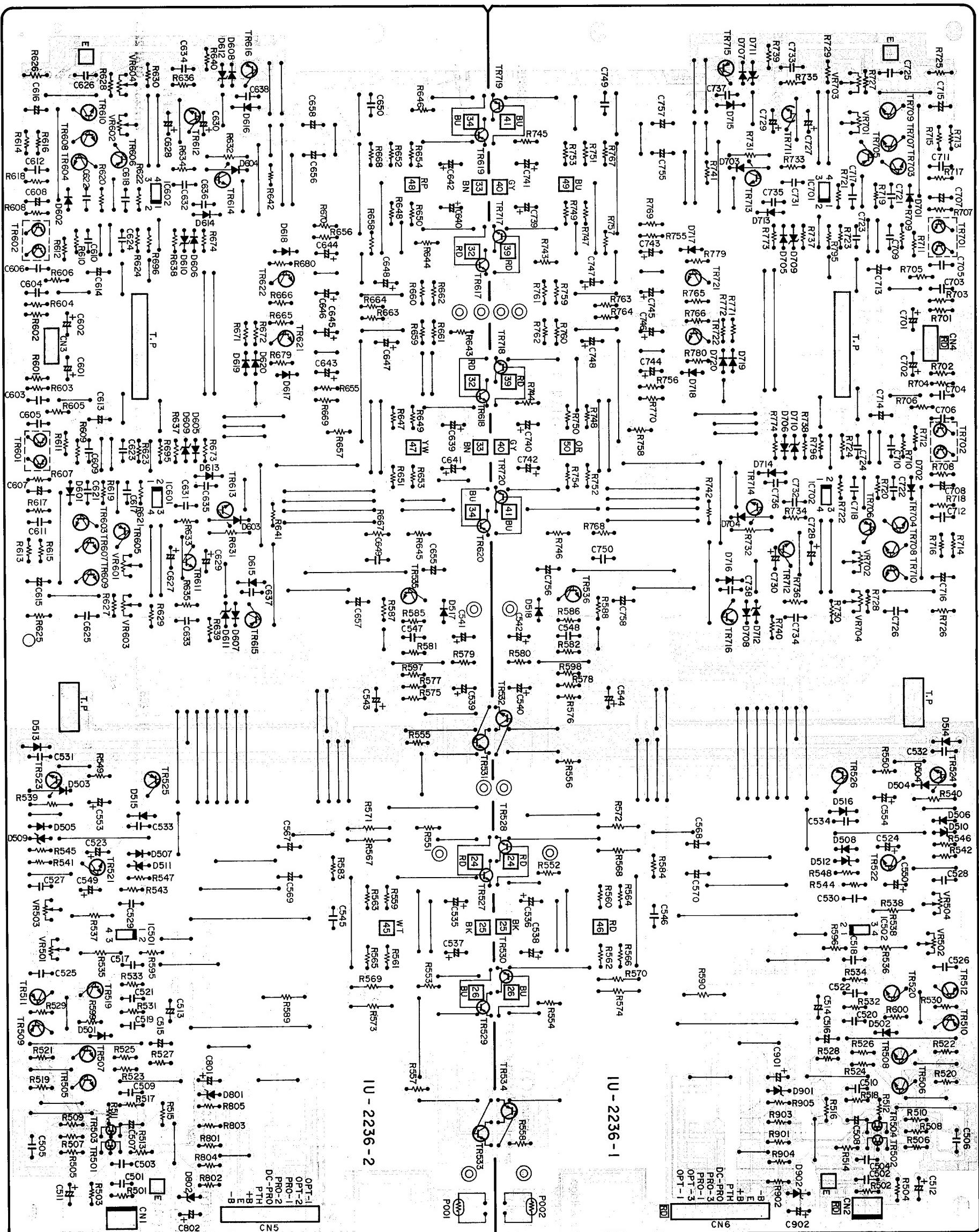


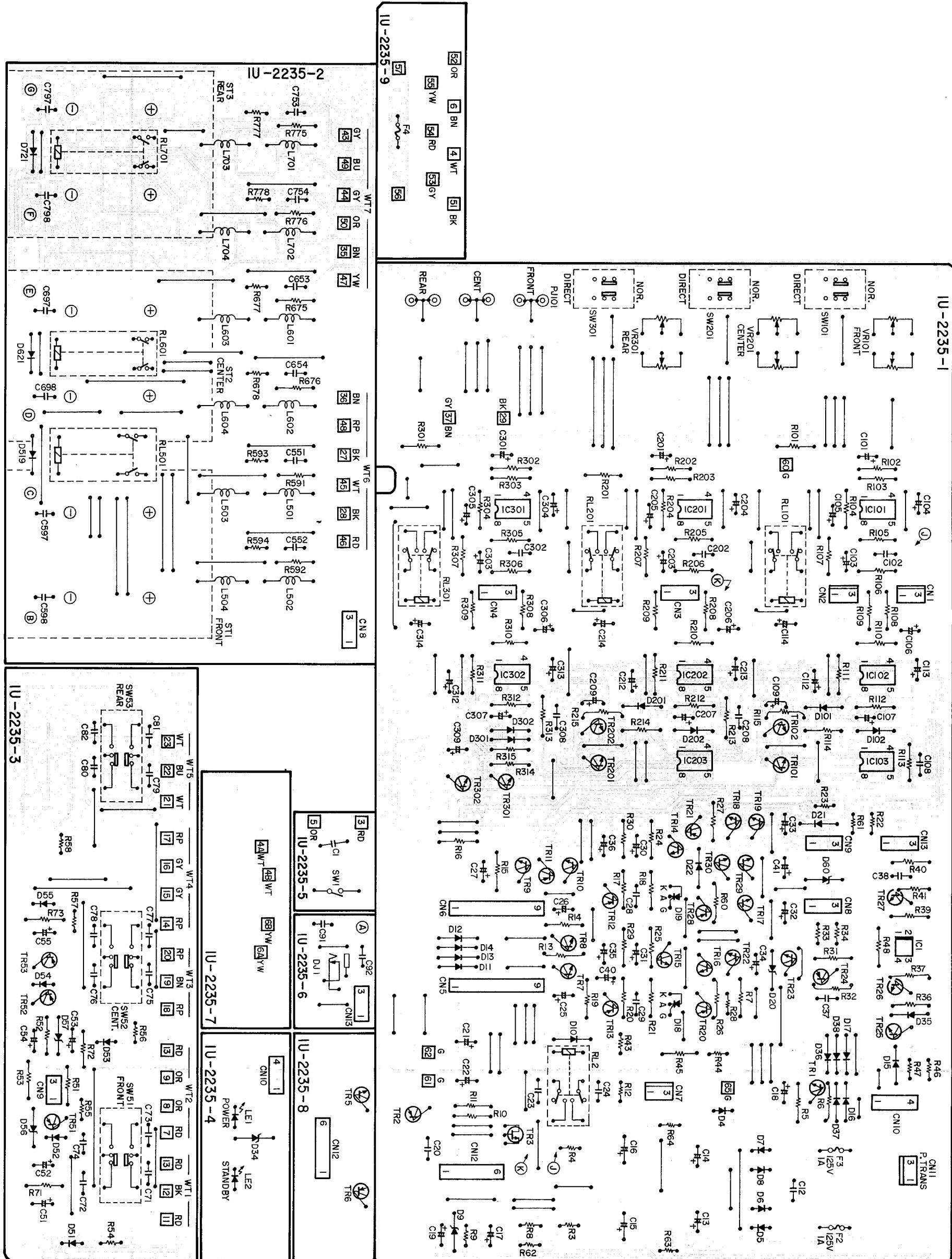
**Base
Collector
Emitter**

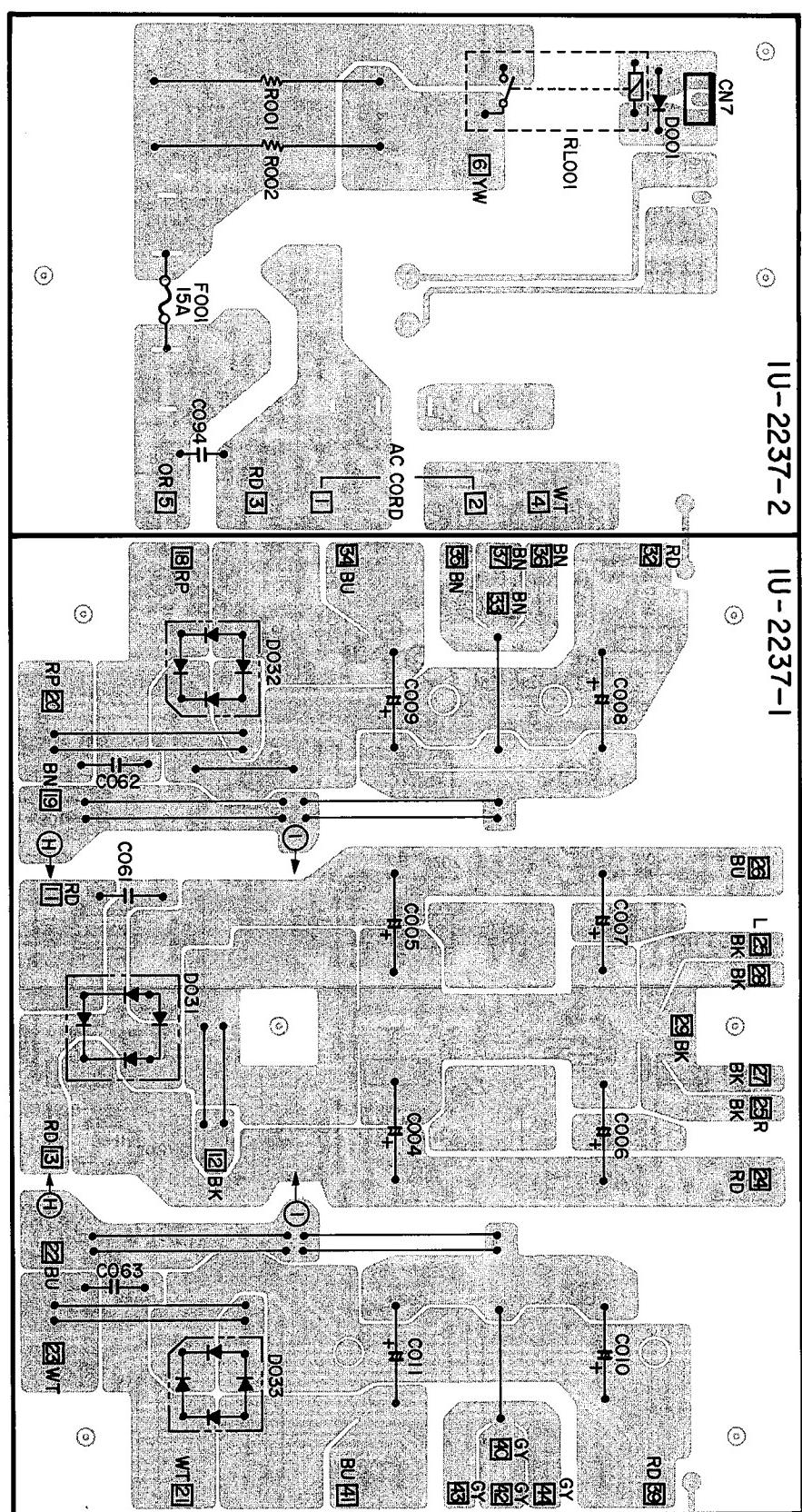


**Base
Collector
Emitter**

P.W.BOARD OF 1U-2236 POWER AMPLIFIER UNIT







NOTE FOR PARTS LIST

- Part indicated with the mark "◎" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
 - When ordering of part, clearly indicate "1" and "1" (1) to avoid mis-supplying.
 - Ordering part without stating its part number can not be supplied.
 - Part indicated with the mark "★" is not illustrated in the exploded view.
 - Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)
- WARNING:**
Parts marked with this symbol Δ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

• Resistors

Ex.: RN	14K	2E	182	G	FR	Others
RC : Carbon R : Metal film RW : Winding RK : Metal mixture	2B : 18W 2E : 14W 2H : 12W 3A : 1W 3F : 3W 3H : 5W	F : ±1% J : ±2% K : ±10% M : ±20%	NL : Low noise type NB : Non-tinning type F : Lead wire forming	P : Pulse-resistant type		

Resistance
 $\frac{1}{8} \frac{8}{2} \frac{2}{4} \Rightarrow$ 1800 ohm = 1.8 kohm
 2-digit effective number, decimal point indicated by R.
 Units: ohm

• Capacitors

Ex.: CE	0E	0.4W	1H	2R2	M	BP	Others
Ca : Aluminum foil C : Aluminum solid CG : Tantalum electrolyte CK : Ceramic	0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1V : 35V	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20%	HS : High stability type BP : Non-polar type HR : Ripple-resistant type HF : For assuring high frequency				
CH : Mica CM : Metallized	2C : 16V 2D : 20V 2E : 25V 2H : 50V	Z : +80% P : +10% C : -0% D : ±0.5PF	U : UL part C : CSD part W : UL+SSA type F : Lead wire forming				

Capacity
 $\frac{2}{2} \frac{R}{R} \frac{2}{4} \Rightarrow$ 2.2μF
 1-digit effective number, decimal point indicated by R.
 Units: μF, (for P, μF (μμF))

- When the dielectric strength is indicated in AC, "AC" is included after

1U-2236 POWER AMP UNIT PARTS LIST

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC501,502	262 0874 009	IC TLP521-1(BL)	
601,602			
701,702			
TR001-504	275 0055 015	Transistor 2SK184C(GR)(BL)	
TR005-508	273 0265 923	Transistor 2SC2705(0)(Y)TPE6	
TR009-512	273 0281 906	Transistor 2SC2705(0)(Y)TPE6	
TR319,520	273 0380 001	Transistor 2SC403A	
TR521,522	274 0158 003	Transistor 2SD1763A(D)	
TR523,524	274 0158 008	Transistor 2SB1186A(D)	
TR525,526	272 0115 008	Transistor 2SC2705(0)(Y)TPE6	
TR535,536	273 0281 906	Transistor 2SC2705(0)(Y)TPE6	
TR601,602	271 0253 006	Transistor 2SA1240F/G	
TR603-610	273 0281 906	Transistor 2SC2705(0)(Y)TPE6	
TR611,612	273 0380 001	Transistor 2SC4208A	
TR613,614	273 0281 906	Transistor 2SD2004(P)	
TR615,616	272 0107 003	Transistor 2SB1328(P)	
TR621,622	273 0265 923	Transistor 2SC1841(EF)	
TR701,702	271 0253 006	Transistor 2SA1240F/G	
TR703-710	273 0281 906	Transistor 2SD2004(P)	
TR711,712	272 0107 003	Transistor 2SC4208A	
TR713,714	273 0380 001	Transistor 2SC2705(0)(Y)TPE6	
TR715,716	274 0151 000	Transistor 2SB1328(P)	
TR721,722	272 0107 003	Transistor 2SC1841(EF)	
	273 0265 923		

RESISTOR GROUP (Not included Carbon Film, ±5% 1/4W type)

ΔR503-504	241 2281 904	Carbon 3.3Kohm 1/4W (N.B)
ΔR505-506	241 2281 946	Carbon 4.7Kohm 1/4W (N.B)

RESISTOR GROUP (Included Carbon Film, ±5% 1/4W type)

ΔR503-504	241 2281 904	Carbon 3.3Kohm 1/4W (N.B)
ΔR505-506	241 2281 946	Carbon 4.7Kohm 1/4W (N.B)

RESISTOR GROUP (Not included Carbon Film, ±5% 1/4W type)

ΔR503-504	241 2281 904	Carbon 3.3Kohm 1/4W (N.B)
ΔR505-506	241 2281 946	Carbon 4.7Kohm 1/4W (N.B)

RESISTOR GROUP (Included Carbon Film, ±5% 1/4W type)

ΔR503-504	241 2281 904	Carbon 3.3Kohm 1/4W (N.B)
ΔR505-506	241 2281 946	Carbon 4.7Kohm 1/4W (N.B)

RESISTOR GROUP (Not included Carbon Film, ±5% 1/4W type)

ΔR503-504	241 2281 904	Carbon 3.3Kohm 1/4W (N.B)
ΔR505-506	241 2281 946	Carbon 4.7Kohm 1/4W (N.B)

RESISTOR GROUP (Included Carbon Film, ±5% 1/4W type)

ΔR503-504	241 2281 904	Carbon 3.3Kohm 1/4W (N.B)
ΔR505-506	241 2281 946	Carbon 4.7Kohm 1/4W (N.B)

RESISTOR GROUP (Not included Carbon Film, ±5% 1/4W type)

ΔR503-504	241 2281 904	Carbon 3.3Kohm 1/4W (N.B)
ΔR505-506	241 2281 946	Carbon 4.7Kohm 1/4W (N.B)

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ΔR505-506	241 2281 946	Carbon 4.7Kohm 1/4W (N.B)

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ΔR505-506	241 2281 946	Carbon 4.7Kohm 1/4W (N.B)

RESISTOR GROUP (Not included Carbon Film, ±5% 1/4W type)

ΔR503-504	241 2281 904	Carbon 3.3Kohm 1/4W (N.B)
ΔR505-506	241 2281 946	Carbon 4.7Kohm 1/4W (N.B)

RESISTOR GROUP (Included Carbon Film, ±5% 1/4W type)

ΔR503-504	241 2281 904	Carbon 3.3Kohm 1/4W (N.B)
ΔR505-506	241 2281 946	Carbon 4.7Kohm

1U-2235 INPUT/CONTROL UNIT

Ref. No.	Part No.	Part Name	Remarks
C725,726	253 4470 900	Ceramic 10 μ F/50V	CC45SL2H100DT
C727,728	254 4260 948	Electrolytic 1 μ F/50V	CE04W1H010M(AWF)
C729,730	254 4289 039	Ceramic 0.01 μ F/50V	CK45BH1H2KT
C731~734	253 1180 947	Ceramic 0.01 μ F/50V	CC45SL2H270DT
C735~738	253 4480 903	Ceramic 27 μ F/50V	CE04W1H010MT
C739~742	254 4396 906	Electrolytic 100 μ F/63V	CD041H220MT
C743~746	254 4260 993	Electrolytic 24 μ F/50V	CE04W1H070MT
C747,748	254 4258 947	Electrolytic 47 μ F/35V	CQ38M1H03J
C749,750	255 4213 972	Plastic F/F 0.01 μ F/50V	CE04D2A101MBPT
C755~758	254 3046 901	Electrolytic(Bipolar) 1 μ F/100V	CE04W1H220M(RS)
C801,802	254 4356 027	Electrolytic 24 μ F/50V	CE04W1H220M(RS)
C901,902	254 4356 027	Electrolytic 24 μ F/50V	CE04W1H220M(RS)
OTHER PARTS			
P001,022	276 0289 004	Posistor	PTH487A01BD22TTS
CN001,002	205 0190 036	3P NH Connector Base	
CN003	205 0234 031	3P EH Side Connector Base	
CN004	205 0588 033	3P EH Side Base(Red)	
CN005	205 0233 030	9P EH Connector Base	
CN006	205 0277 038	9P EH Connector Base(Red)	
SEMICONDUCTORS GROUP			
IC001	262 0847 009	IC Photo Coupler TLP521-1(BL)	
IC002	263 0594 007	IC NUM2068DAC	
IC103	263 0590 004	IC NUM4558D-D	
IC201	263 0594 007	IC NUM2068DAC	
IC202	265 0630 004	IC NUM4558D-D	
IC203	263 0654 002	IC NUM2082D	
IC301	263 0594 007	IC NUM2068DAC	
IC302	265 0030 004	IC NUM4558D-D	
RESISTOR GROUP (Not included Carbon Film, ±5% / 1.4W type)			
ΔR003,004	241 2387 908	Carbon 1ohm 14W (N.B)	RJ14B2E010NBS
ΔR008	244 2052 902	Metal Oxide Film 2.7kohm 1W (N.B)	RS14B3A272JS
ΔR009	244 2051 990	Metal Oxide Film 4.7kohm 1W (N.B)	RS14B3A472JS
ΔR012	241 2379 916	Carbon 5.1ohm 14W (N.B)	RD14B2E51JNBS
ΔR022,023	241 2380 905	Carbon 1.2kohm 14W (N.B)	RD14B2E122NBS
TR001	273 0259 916	Transistor 2SC2879(A/B)/TE2	
TR002	271 0131 924	Transistor 2SA988T(TEF)	
TR003	275 0048 912	FET 2SK361(B)/(C/T)	
TR005	274 0138 007	Transistor 2SD1944	
TR006	272 0119 004	Transistor 2SB1287	
TR007~010	273 0317 906	Transistor 2SC2458BL(TPE4	
TR011	271 0191 916	Transistor 2SA1048(GR)TPE4	
TR013	273 0235 923	Transistor 2SC1841TE(F)	
TR014,015	269 0025 901	D.Transistor RN1202(10k-10k)T	
TR016	273 0317 906	Transistor 2SC2458(BL)TPE4	
TR017	269 0025 901	D.Transistor RN1202(10k-10k)T	
TR018	273 0317 906	Transistor 2SC2458(BL)TPE4	
TR019	269 0025 901	D.Transistor RN1202(10k-10k)T	
TR020,021	269 0026 900	D.Transistor RN1202(10k-10k)T	
TR022	274 0111 901	Transistor 2SD1111T	
TR023	273 0235 923	Transistor 2SC1841TE(F)	
TR024	271 0131 924	Transistor 2SA988T(TEF)	
TR025	274 0060 900	Transistor 2SD667A(C/TZ)	
TR026,027	273 0317 906	Transistor 2SC2458(BL)TPE4	
TR028	269 0026 900	D.Transistor RN1202(10k-10k)T	
TR029	273 0317 906	Transistor 2SC2458(BL)TPE4	
TR030	269 0026 900	D.Transistor RN1202(10k-10k)T	
TR051,053	273 0235 923	Transistor 2SC1841TE(F)	
TR101	269 0067 901	D.Transistor RN1205(2.2K-47K)T	
TR102	273 0235 923	Transistor 2SC1841TE(F)	
TR201	269 0067 901	D.Transistor RN1205(2.2K-47K)T	
TR202	273 0235 923	Transistor 2SC1841TE(F)	
TR301	269 0067 901	D.Transistor RN1205(2.2K-47K)T	
TR302	276 0348 000	Diode S2K20F	
D004~008	276 0249 921	Zener Diode HZ18-1TE	
D009	276 0049 914	Diode 1S2076A	
D010~017	276 0049 914	Diode SF01H4A2(TPE2)	
D018,019	276 0016 904	Zener Diode HZ12A-2	
D020	276 0318 001	Diode 1S2076A	
D021,022	276 0049 914	Zener Diode HZ12A-2	
D034	276 0218 936	Zener Diode HZ9B2-TE	
D035~038	276 0049 914	Diode 1S2076A	
D051~055	276 0253 905	Diode 1SR35-200A(T93X)	
D056,057	276 0236 934	Zener Diode HZ5C-1TE	
D060	276 0318 001	Zener Diode HZ12A-2	
D101,102	276 0049 914	Diode 1S2076A	
201,202			
301,302			
519,621			
721			

Ref. No.	Part No.	Part Name	Remarks
LE001	393 9420 907	LED SEL417R-T	(Req) (Orange)
LE002	393 9426 910	LED SEL417D-T	
RESISTOR GROUP (Not included Carbon Film, ±5% / 1.4W type)			
ΔR003,004	241 2387 908	Carbon 1ohm 14W (N.B)	RJ14B2E010NBS
ΔR008	244 2052 902	Metal Oxide Film 2.7kohm 1W (N.B)	RS14B3A272JS
ΔR009	244 2051 990	Metal Oxide Film 4.7kohm 1W (N.B)	RS14B3A472JS
ΔR012	241 2379 916	Carbon 5.1ohm 14W (N.B)	RD14B2E51JNBS
ΔR022,023	241 2380 905	Carbon 1.2kohm 14W (N.B)	RD14B2E122NBS
ΔR028	244 2055 974	Metal Oxide Film 1.2kohm 1W (N.B)	RS14B3A102JS
ΔR033,034	244 2052 931	Metal Oxide Film 390ohm 1W (N.B)	RS14B3A391JS
ΔR043	244 2056 975	Metal Oxide Film 1.3kohm 1W (N.B)	RS14B3A132JS
ΔR044~047	244 2052 902	Metal Oxide Film 2.7kohm 1W (N.B)	RS14B3A272JS
ΔR054~056	241 2387 908	Carbon 1ohm 14W (N.B)	RD14B2E100JNBS
ΔR061	241 2380 905	Carbon 1.2kohm 14W (N.B)	RD14B2E122NBS
ΔR062	244 2052 902	Metal Oxide Film 2.7kohm 1W (N.B)	RS14B3A272JS
ΔR063	244 2051 987	Metal Oxide Film 4.7kohm 1W (N.B)	RS14B3A472JS
ΔR064	244 2043 937	Metal Oxide Film 100hm 1W (N.B)	RS14B3A100JS
ΔR531,593	244 2050 904	Metal Oxide Film 220hm 1W (N.B)	RS14B3A220JS
V931,677,678	777,778	Variable 100k Ω	V1620V30FB104
VR301	211 9106 000	Variable 100k Ω	
CAPACITORS GROUP			
ΔC001	253 9011 705	Ceramic 0.01 μ F/250V/AC (Multi-Voltage Model)	CK45P2EAC103ZC
C012	255 6167 000	Polystrene Film 0.01 μ F/125V	CO99SB103KB
C013,014	254 4262 784	Electrolytic 470 μ F/35V	CE04W1J471MC
C015,016	254 4397 701	Electrolytic 2200 μ F/63V	CE04W1J222MC
C017	254 4261 921	Electrolytic 100 μ F/50V	CE04WH101MT
C018	256 1030 012	Metalized 1 μ F/100V	CE93W1A105J
C019	254 4291 700	Electrolytic 10 μ F/100V	CE04WA100M(AWF)
C020	253 4494 902	Ceramic 100 μ F/50V	CC45SL2H101JT
C021,022	254 4359 027	Electrolytic 220 μ F/50V	CE04WH220M(AFS)
C023	253 1151 905	Ceramic 0.0047 μ F/50V	CK45F2H472PT
C024	254 4259 909	Electrolytic 10 μ F/16V	CE04WC100MT
C025,026	254 4259 932	Electrolytic 220 μ F/35V	CE04WU221MT
C027	254 4259 932	Electrolytic 47 μ F/25V	CK45F1H103ZT
C028,029	253 1181 904	Ceramic 0.01 μ F/50V	CE04W1E470MT
C030	254 4254 938	Electrolytic 47 μ F/16V	CO99PA223JT
OTHER PARTS			
L501~504	235 0088 004	Inductor	1mH
701~704			
RL002	214 9013 008	Relay	
RL101,201	214 0143 003	Relay	
RL501	214 0037 009	Relay	
RL601,701	214 0129 001	Relay	
A,F002,003	206 1039 034	Fuse 10A	
△			

1U-2237 POWER SUPPLY UNIT

Ref. No.	Part No.	Part Name	Remarks
DJ001 PJ101 ST01~003 WT001,003, 005	204.8101.008 204.9288.002 205.0671.005 205.0075.038	2P Power Jack 6P Connector Base 4P Terminal 3P Terminal	INPUT(GOLD)
WT002,004 WT005,007 CN001,002 CN003 CN004 CN005 CN006 CN007 CN008 CN009 CN010 CN010 CN011 CN012 CN013	205.0075.041 205.0075.067 205.0190.036 205.0233.032 205.0277.030 205.0233.090 205.0277.098 205.0190.036 205.0587.034 205.0278.039 205.0296.037 205.0234.044 205.0233.045 205.0190.036 204.0339.001 205.0233.061 205.0276.031	Wrapping Terminal 6P Wrapping Terminal 3P NH Connector Base 3P EH Connector Base 3P EH Connector Base(Red) 9P EH Connector Base 9P EH Connector Base(Red) 3P NH Connector Base 3P EH Slide Base(BLK) 3P EH Connector Base(BLK) 3P EH Connector Base(Yel) 4P EH Slide Connector Base 4P EH Connector Base 3P NH Connector Base 6P EH-SCN Connector Cord 6P EH Connector Base 3P EH Connector Base(BLU)	INPUT(GOLD)

Ref. No.	Part No.	Part Name	Remarks
D001 D031 D032,033 R001,002	276.0049.011 276.0579.002 276.0586.008 243.2079.021	Diode 1S2076A Diode S10V/B20F-15 Diode S10V/B20 Wire Wound Resistor(Cement))	RW78A4A330K-(LL)
C004,005 C006,007 C008-011 C061~063	254.4370.715 254.4412.000 254.4365.720 256.1043.711	Electrolytic Capacitor 8200μF/63V 8200μF/63V Electrolytic Capacitor 12000μF/55V Metallized Capacitor 0.47μF/250V	CE04W1J822MC(DL) CE04W1J822MC(ARS) CE04W1J822MC(DL) CF99B2E474K
ΔC093	255.8011.006	Ceramic Capacitor 0.01μF/250VAC	CK45F2EAC103Z
C094,095	255.6167.000	Polysyrene Film Capacitor 1μF/125V	CQ09S2B105K(B)
RLL01 CN007	214.0117.000 205.0190.036	Relay (VS46MBU1-TV5) 3P NH Connector Base	
ΔF001 ΔF001	206.1051.030 206.1017.030	Fuse 15A Fuse 15A	U.S.A. Models Multi-Voltage Models

PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks
◎ 1	412 9294 007	SWITCH COVER	(Gold)
◎ 2	102 9036 106	TOP COVER	(Black)
◎ 2	102 9036 122	TOP COVER	
◎ 3	461 9025 032	RUBBER SHEET	
◎ 4	122 9005 001	SPACER	
◎ 5	122 9006 017	CUSHION	
◎ 6	461 9012 016	CUSHION	
◎ 7	112 0555 007	VOLUME KNOB(B)	
◎ 8	113 9242 107	PUSH-KNOB(P) ASSY	(Gold)
◎ 8	113 9242 110	PUSH-KNOB(P) ASSY	(Black)
◎ 9	144 9138 008	FRONT PANEL ASSY	(Gold)
◎ 9	144 9138 215	FRONT PANEL ASSY	(Black)
◎ 10	144 9137 106	SIDE ESC. BAR	(Gold)
◎ 10	144 9137 119	SIDE ESC. BAR	(Black)
◎ 11	412 9292 009	ESC. SUPPORTER	
◎ 12	412 9293 008	ESC. SUPPORTER	
◎ 13	477 0096 007	PUSH RIVET	
◎ 14	412 9295 006	HEAT SINK SUPPORTER	
◎ 15	461 0390 070	RUBBER SHEET	
◎ 16	415 9061 006	INSULATING COVER	
◎ 17	125 9004 047	UL TUBE	
◎ 18	233 9643 008	POWER TRANSFORMER	U.S.A. Models
◎ 18	233 9643 000	POWER TRANSFORMER	Multivoltage Models
◎ 19	445 0048 016	CORD HOLDER	L50
◎ 20	443 0900 129	P.W.B. SUPPORTER	
◎ 21	412 9274 014	P.W.B. BRACKET	
◎ 22	412 9289 107	HEAT SINK BRACKET(Rear)	
◎ 23	412 9291 107	HEAT SINK BRACKET(Left)	
◎ 24	412 9290 108	HEAT SINK BRACKET(Right)	
◎ 25	417 9062 001	CU PLATE	
◎ 26	417 9061 109	HEAT SINK	
◎ 27	415 0234 007	INSULATING SHEET	
◎ 28	415 9059 005	INSULATING SHEET	
◎ 29	273 0355 077	TRANSISTOR 2SC3856(B)	
◎ 30	271 0221 009	TRANSISTOR 2SA1492(B)	
◎ 31	273 0391 003	TRANSISTOR 2SC291	
◎ 32	271 0245 001	TRANSISTOR 2SA1302	
◎ 33	417 9063 000	HEAT SINK	
◎ 34	412 9289 106	LEVEL VOLUME BRACKET	
◎ 35	461 0114 023	CUSHION	
◎ 36	415 9016 019	P.C.B. HOLDER	
◎ 37	443 0015 002	P.W. SPACER	
◎ 38	104 9028 202	FOOT	
◎ 39	412 9081 207	SUPPORT BRACKET	
◎ 40	105 9185 108	BOTTOM COVER	
◎ 41	414 9117 009	SAFETY SHEET	
◎ 42	455 0071 039	CORD BUSH	
◎ 43	206 2060 102	AC CORD(POLARIZED)	U.S.A. Models
◎ 43	206 2063 005	AC CORD(WITH PLUG)	Multivoltage Models
◎ 44	415 9032 006	P.C.B. HOLDER(1)	
◎ 45	412 9287 108	CHEM. CON. BRACKET	
◎ 46	105 9208 108	REAR PANEL	
◎ 46	105 9205 101	REAR PANEL	
◎ 47	411 9099 102	SHIELD CHASSIS	
◎ 48	411 9098 103	TRANS. CHASSIS	
◎ 49	411 9097 104	FRONT CHASSIS	
◎ 50	412 9296 005	BRACKET(A)	
◎ 51	393 9420 907	LED(RED)	SEL417R-T(LE)
◎ 52	393 9420 910	LED(GRG)	SEL4917D-T(LE2)
◎ 53	272 0119 004	TRANSISTOR 2SB1287	

Ref. No.	Part No.	Part Name	Remarks
54	274 0138 007	TRANSISTOR 2SD1944	
55	212 9534 002	POWER SWITCH	
56	212 2605 006	SLIDE SWITCH	
57	211 9106 000	VARIABLE RESISTOR	V1620V30FB104
58	212 3644 008	SLIDE SWITCH	
59	204 8288 002	6P CONNECTOR BASE	
A	60	Fuse 10A Fuse 1.0A	U.S.A. Models Multi-Voltage Models
A	60	Fuse 10A Fuse 1.0A	BSR-H-2S UL RY-24W
61	214 9013 008	RELAY	
62	214 0143 003	RELAY	
63	204 8101 008	2P POWER JACK	
64	205 0671 005	4P TERMINAL	
65	243 2079 021	WINDING-RESISTOR	
66	214 0117 000	RELAY	
A	67	Fuse 15A Fuse 15A	U.S.A. Models Multi-Voltage Models
A	67	Fuse 15A Fuse 15A	4D4B42(LC1) D5FB20(401) L=76
68	276 0424 005	DIODE	
69	276 0366 005	DIODE	
70	445 0048 003	CORD HOLDER	t=3.3
71	415 9018 017	INSULATING SHEET	t=3.3
72	461 0390 012	RUBBER SHEET	t=2
73	461 9029 009	SPACER	t=0.5
A	80	VOLTAGE SELECTOR	Multi-Voltage Models Only
C	81	VOLTAGE SELECTOR BRACKET	Multi-Voltage Models Only
C	201	1U-2235E	INPUT/CONTROL UNIT
C	201	1U-2235D	INPUT/CONTROL UNIT
C	202	1U-2236E	POWER AMPLIFIER UNIT
C	202	1U-2236D	POWER AMPLIFIER UNIT
C	203	1U-2236D	POWER SUPPLY UNIT
C	203	1U-2237D	POWER SUPPLY UNIT
C	101	473 7017 016	SCREW 3x8
C	102	473 7002 005	SCREW 3x6
C	103	473 7002 021	SCREW 3x8
C	100	473 7015 018	SCREW 3x8
C	105	477 0084 107	SCREW 3x10
C	106	473 7508 017	SCREW 3x10
C	107	473 7501 014	SCREW 3x14
C	108	473 8007 025	3x8 SCREW WITH WASHER
C	109	473 8007 009	3x12 SCREW WITH WASHER
C	110	473 8007 038	3x14 SCREW WITH WASHER
C	111	471 1302 019	3x5 SCREW
C	112	473 0263 005	3POINT SWELLING SCREW
C	113	477 0263 018	3POINT SWELLING SCREW (Gold)
C	113	477 0263 005	3POINT SWELLING SCREW (Black)
C	114	477 0262 006	SPECIAL SCREW
C	115	475 3009 008	SPECIAL WASHER (#7)
C	116	SPECIAL NUT (#7)	
C	117	473 7002 034	SCREW 3x6
		CBTS(S)-B	
		CBTS(P)-B	
		CBTS(P)-Z	

PARTS LIST OF PACKING & ACCESSORIES

Ref. No.	Part No.	Part Name	Remarks	Qty
◎	504-7102 003	STYRENE PAPER (800x650)		1
◎	504-7102 032	STYRENE PAPER (350x250)	FOR ACCORD	1
	505-0075 051	CABINET COVER	FOR Accessories	1
	505-8023 076	ENVELOPE		1
	503-9219 100	CUSHION (L)		1
	503-9220 102	CUSHION (R)		1
	502-9122 003	CUSHION (REAR)		1
	501-9191 031	CARTON CASE		1
	203-2247 004	REMOTE PLUG CORD		1
	511-9315 005	INST. MANUAL		1
	513-9160 007	NOTICE SHEET		1
	513-9111 001	COLOR LABEL (Gold)	(Gold)	1

WARNING:

- **Caution** When using streaming media options or network links in your work to safety.
 - Be sure to use the specified parts for replacement.
 - Part indicated with the mark "◎" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
 - (Black) in the remarks column refers models with black front panels, (Gold) to models with gold front panels.

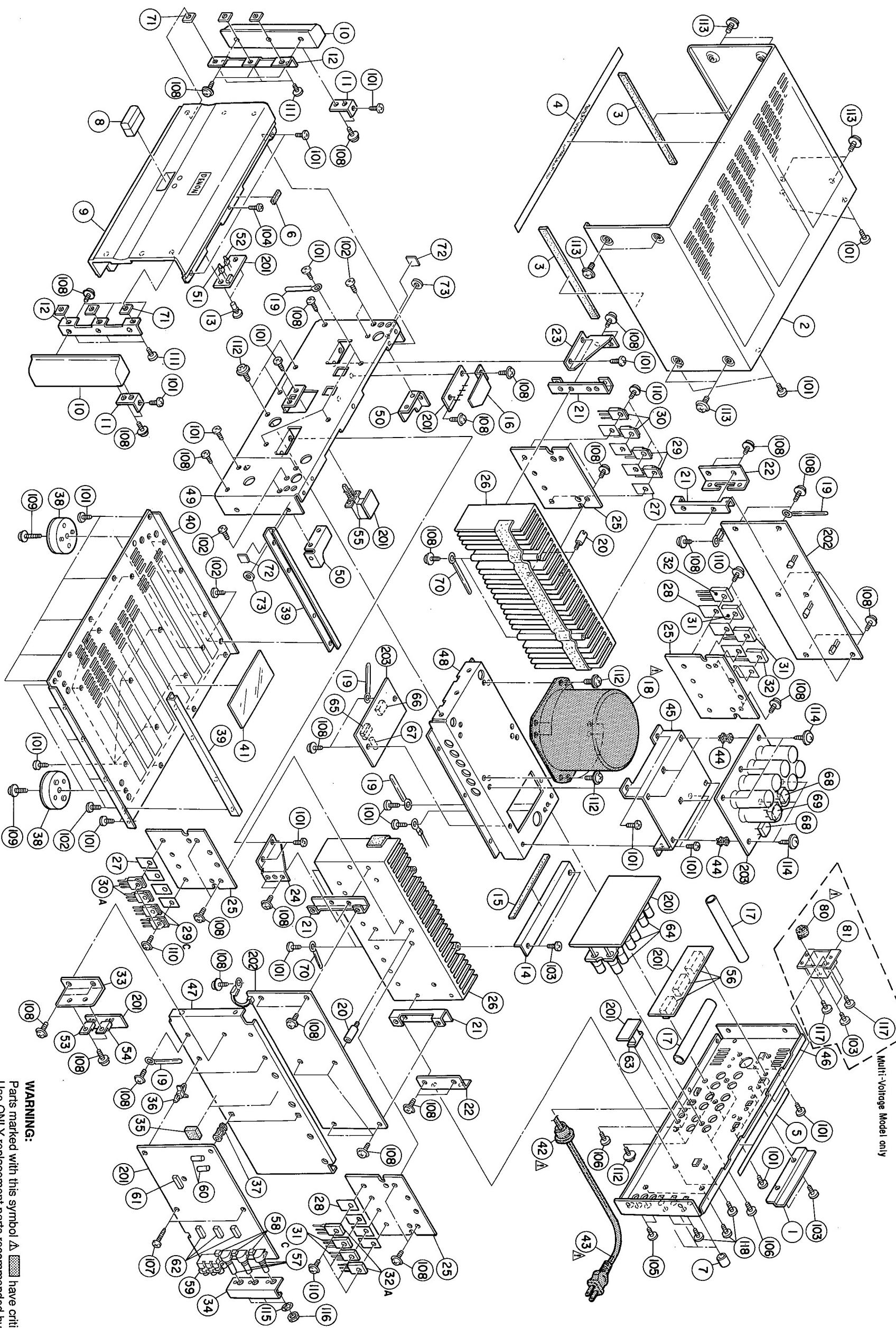
EXPLODED VIEW

1
2
3
4
5
6
7
8

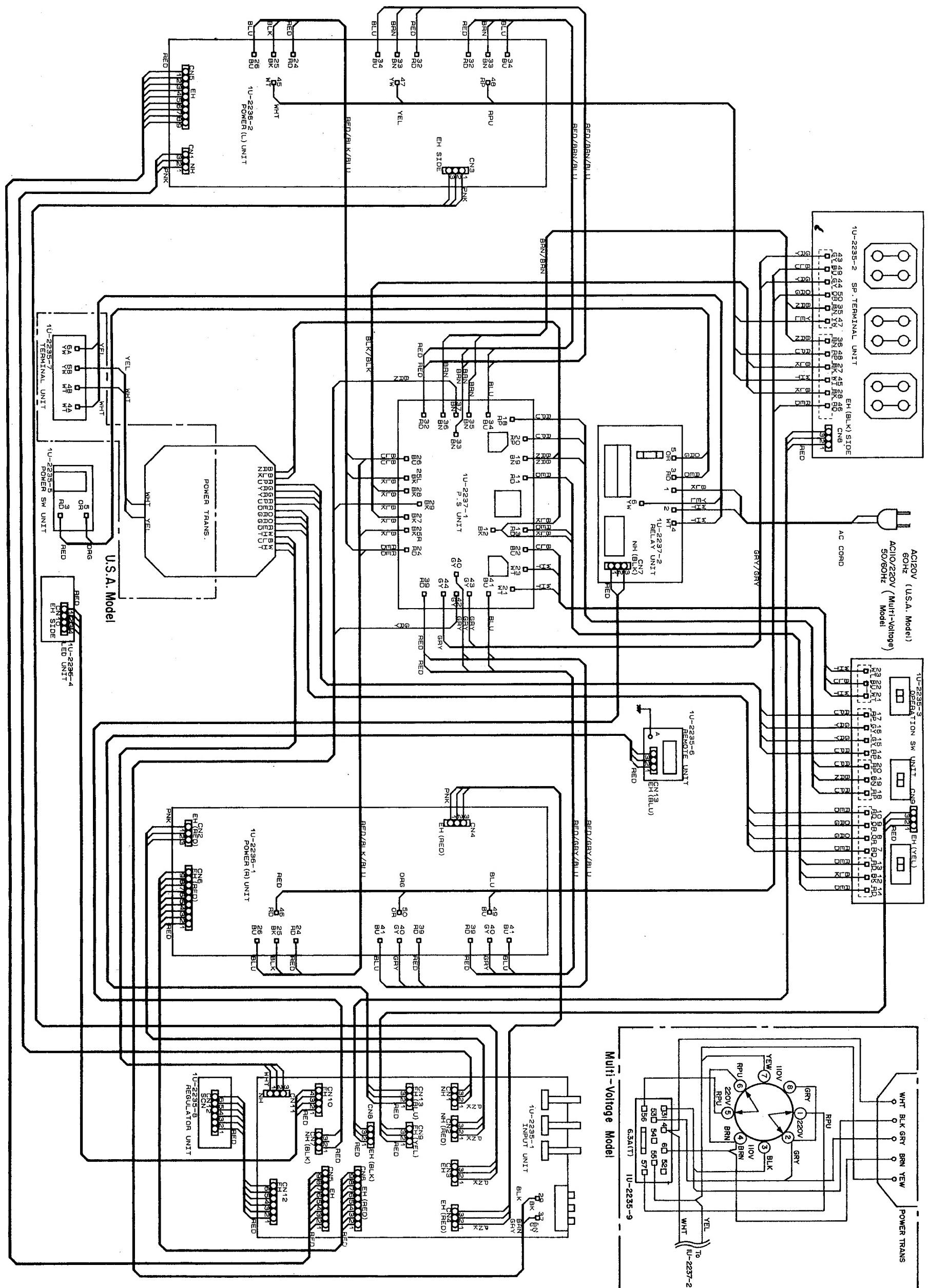
117 Multi-Voltage Model only

7 Multi-Voltage Model only

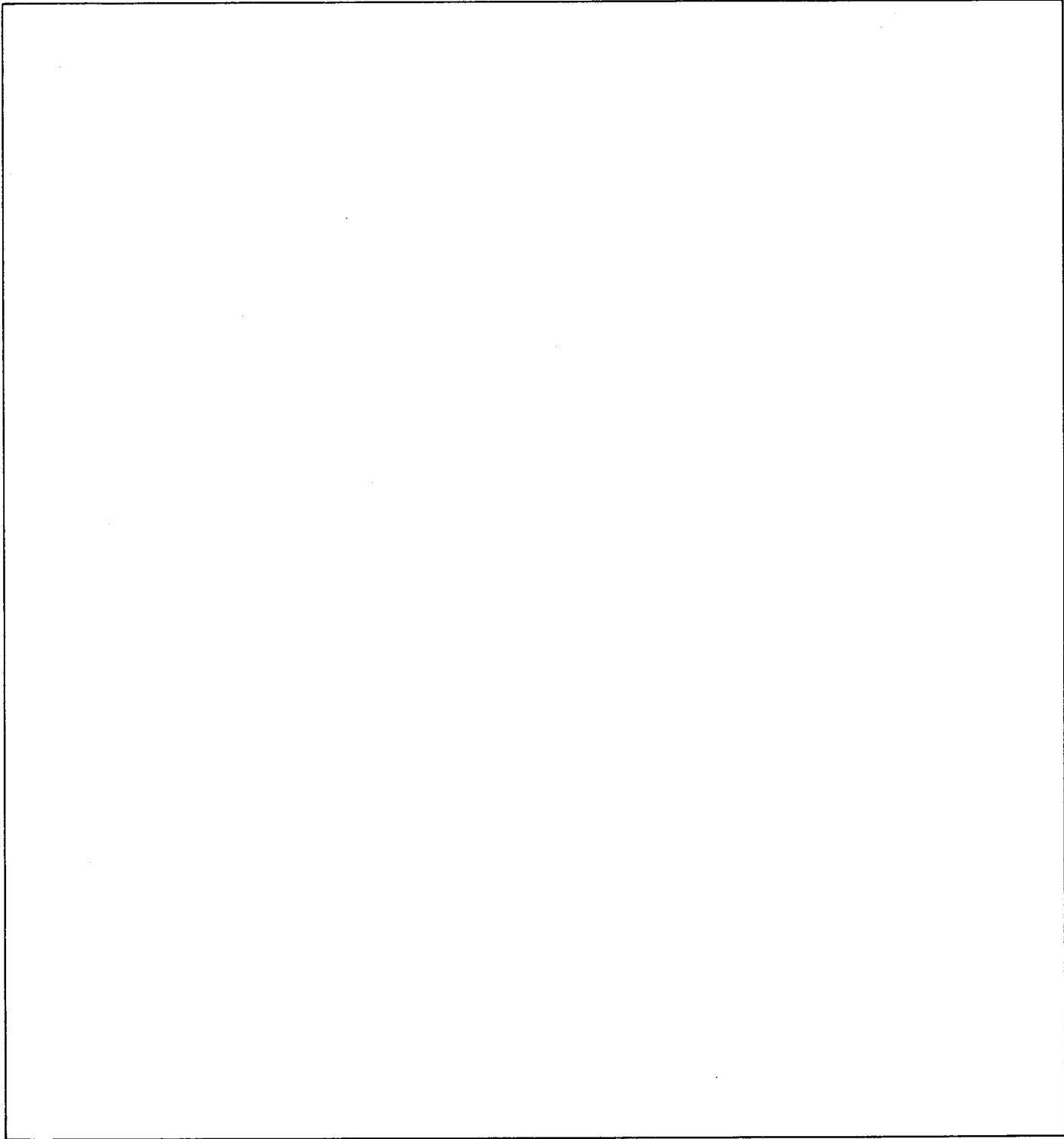
WARNING:
Parts marked with this symbol  have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.



POA-5000



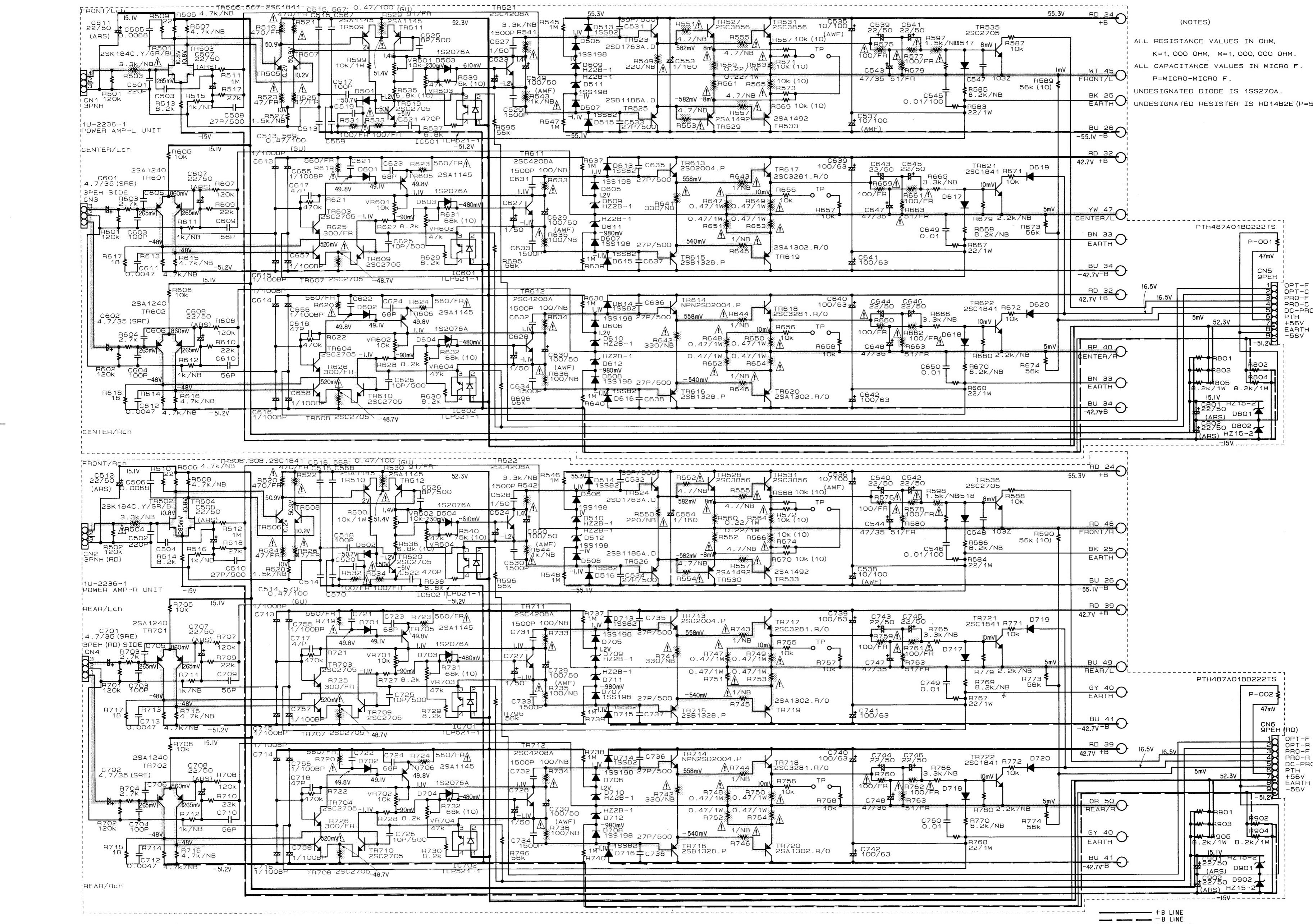
DENON

**NIPPON COLUMBIA CO., LTD.**

14-14, 4-CHOME AKASAKA,
MINATO-KU, TOKYO 107-11 JAPAN
TEL: 03-3584-8111
TLX: JAPANOLA J22591
CABLE: NIPPONCOLUMBIA TOKYO

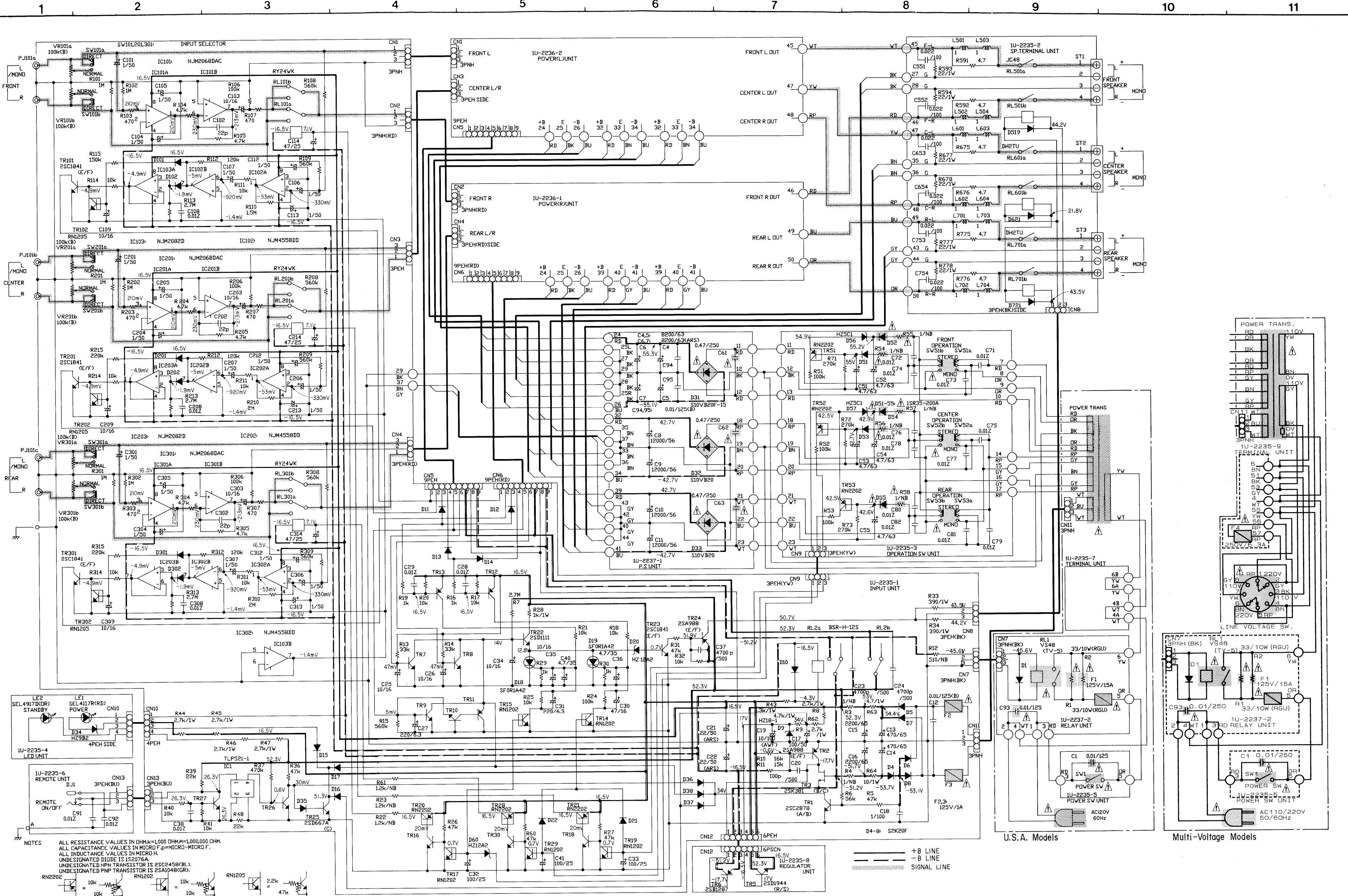
SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10 11



NOTES
ALL RESISTANCE VALUES IN OHM. K=1,000 OHM, M=1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

SCHEMATIC DIAGRAM



WARNING:
Parts marked with this symbol have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 millamps, or if the resistance from chassis to either side of the power cord is less than 240 kohms, the unit is defective.

WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.